bio-protocol Preprint

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Detection of aptamer in tissues by qRT-PCR

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An abbreviated version of this protocol was published in Science Translational Medicine in Jun 2020

Aptamers against mouse and human tumor-infiltrating myeloid cells as reagents for targeted chemotherapy

DOI: 10.1126/scitranslmed.aav9760

Detailed protocol

RNA aptamers are rapidly gaining interest as targeting moieties for drug delivery due to their easy production and scalability, high affinity and specificity, lack of immunogenicity, and deep tissue penetration properties. Determination of the in vivo distribution of aptamers is essential to evaluate their performance and develop efficient delivery protocols. Many techniques that are currently used to perform biodistribution studies as optical imaging, magnetic resonance (MR), or nuclear medicine (as PET and SPECT) can be applied to the study of aptamers but require either the use of radioactive nucleotides or coupling the aptamers with the imaging probe de facto altering the pharmacokinetic and the biodistribution of the aptamer. These strategies often need dedicated and expensive instruments and/or the use and disposal of radioactive material. Here we describe a sensitive and safe method based on qRT-PCR for the ex vivo quantification of unmodified aptamers in tissues.

Related files

Detection and quantification of aptamer in tissues by qRT-PCR.pdf

How to cite:(Readers should cite both the Bio-protocol preprint and the original research article where this protocol was used)

1. Zilio, S. and Serafini, P. (2022). Detection of aptamer in tissues by qRT-PCR. Bio-protocol Preprint. bio-protocol.org/prep1513.
2. Fuente, A. D. L., Zilio, S., Caroli, J., Simaeys, D. V., Mazza, E. M. C., Ince, T. A., Bronte, V., Bicciato, S., Weed, D. T. and Serafini, P.(2020). Aptamers against mouse and human tumor-infiltrating myeloid cells as reagents for targeted chemotherapy . Science Translational Medicine 12(548). DOI: 10.1126/scitranslmed.aav9760